/***Program 10:** Design, Develop and Implement a Program in C for the following operations on Graph(G) of Cities. a. Create a Graph of N cities using Adjacency Matrix. b. Print all the nodes reachable from a given starting node in a digraph using any traversal method. */

```
#include<stdio.h>
#include<stdlib.h>
void dfs(int v);
int a[50][50], n, visited[50];
int s[20], top = -1, count=0;

void creategraph()
{
        int i, j;
        printf("\nEnter the number of vertices in graph:  ");
        scanf("%d",&n);
        printf("\nEnter the adjacency matrix:\n");
        for(i=1; i<=n; i++)
                for(j=1;j<=n;j++)
                                scanf("%d", &a[i][j]);
}

void dfs(int v)
{
        int i;
        visited[v]=1;
        s[++top] = v;
        for(i=1;i<=n;i++)
        {
                if(a[v][i] == 1&& visited[i] == 0 )
                {
                        dfs(i);
                        count++;
                }
        }
}

int main()
{
        int ch, start, i, j;
        creategraph();
        for(i=1;i<=n;i++)
                visited[i]=0;
        printf("\n Enter the starting vertex:\t");
        scanf("%d", &start);
        dfs(start);
        printf("\nNodes reachable from starting vertex %d are:\n", start);
        for(i=1;i<=count;i++)
```

```
            printf("%d\t", s[i]);
}
```

Output:

Enter the number of vertices in graph: **4**
Enter the adjacency matrix:
0 1 0 1
0 0 1 0
0 0 0 1
0 0 0 0

Enter the starting vertex: **1**
Nodes reachable from starting vertex 1 are:
2 3 4

Enter the number of vertices in graph: **4**
Enter the adjacency matrix:
0 1 0 1
0 0 1 0
0 0 0 1
0 0 0 0
Enter the starting vertex: **2**
Nodes reachable from starting vertex 2 are:

3 4